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ABSTRACT

Problems associated with the use of the Higher Education General Information Survey (HEGIS) data to make institutional comparisons are discussed. It is noted that information collected by HEGIS includes data on enrollment, degrees, finances, employees, libraries, and physical facilities. Attention is directed to the following problems with the comparability of HEGIS data: universe definition, funding differences, and reporting problems. Also considered are results of a survey investigating the differences in definitions and calculations among institutions in reporting HEGIS data. Reporting by 78 institutions was studied for two reports, the "Fall Enrollment and Compliance Report" and the "Financial Statistics Survey." It is concluded that problems of comparability with HEGIS data were confirmed by the study. The following three major types of differences were found that can affect data interpretation: ratios of dollars per full-time-equivalent (FTE) enrollment differ significantly depending on the definition used for FTE; categorizing expenditures by function differs among institutions; and rankings among peer institutions differ depending on the definitions and calculations used when completing the HEGIS surveys. (SW)

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Using HEGIS Data in Institutional Comparisons

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THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

This paper was presented at the Twenty-Fourth Annual Forum of the Association for Institutional Research held at the Hyatt-Regency in Fort Worth, Texas, May 6-9, 1984. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum papers.

Daniel R. Coleman, Chairman
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Using HEGIS Data in Institutional Comparisons

Fiscal problems and the threat of declining enrollments developing in the late 1970s and continuing into the 1980s have produced many problems for postsecondary education. Calls for accountability on the part of institutions have developed. Colleges and universities are being questioned about their effectiveness--that is, whether institutions are doing what is right and doing it well--as well as about their efficiency, which probes into how economically institutions are able to function (Brinkman and Krakower 1983).

During this period of financial stress and declining enrollment, colleges and universities are forced to argue for continuing financial support and are using comparative data so quantitative analyses can make these arguments as strong as possible. There are many sources of data that can be used for comparative analyses in higher education, including the Higher Education General Information Surveys (HEGIS) collected by the National Center for Education Statistics (NCES), the National Science Foundation Surveys (NSF), individual state information systems, and organizations such as the Southern Regional Education Board (SREB), American Association of Universities, and so on.

Among the multitude of sources of comparative data, HEGIS is particularly well known and most widely used. Through HEGIS a wide variety of data have been collected annually since 1966 from almost every institution in the United States, both public and private. Information collected includes data on enrollment, degrees, finances, employees, libraries, and physical facilities (Andrew 1980).

HEGIS data are frequently used to make comparisons between institutions, between institutional sectors, and between states. Since higher education is so diverse, comparative analysis is often difficult. Several logistical problems

compound this issue. The purpose of this paper is to discuss and demonstrate some of the problems associated with using HEGIS data for comparative analyses.

Generally speaking, institutions report "accurate" data to NCES, but because of differences among institutional and state practices, the data may not be comparable. Different interpretations of definitions provided by HEGIS also make the comparability of data questionable even though efforts are being made to standardize definitions. For example, in 1975 NCES adopted common definitions and data structures developed by the National Association of College and University Business Officers (NACUBO), the American Institute of Certified Public Accountants (AICPA), and the National Center for Higher Education Management Systems (NCHEMS) for financial reporting. However, Minter and Conger (1979) found that among 700 independent institutions only 10 percent actually followed the NACUBO/AICPA guidelines, although an additional 50 percent more claimed to be following them.

In a recent study of institutions and coordinating boards in eight states, Lapovsky (1983) concluded that problems with the comparability of HEGIS data could be classified into three categories:

- Universe definition
- Funding differences
- Reporting problems.

Each of these problems is discussed below.

Universe Definition

In the HEGIS universe, there are vast differences among the institutions and states on which functions are included and which are excluded for reporting purposes. For example, some medical schools are assigned their own FICE codes and

report separately to HEGIS; for others, the data for the medical school are integrated into the institutional reports. Similar problems arise with reporting for agricultural experiment stations, cooperative extension service, research laboratories, continuing education, vocational technical institutes, and central administrations. It is often difficult to determine when these entities are included in HEGIS and when they are not. The differences can make comparative analyses appear understated or overstated depending on whether or not these entities are included.

Funding Differences

Several examples of funding differences exist. Examples are given to illustrate the variations.

The first example of funding difference occurs because of differences in the entities that distribute funds: one state may fund specific programs directly through the institutions, but similar programs in another state are funded from a central agency bypassing the institutions. Consequently an institution may not report accurately the funds for the program or it may be overlooked completely. Centrally-funded functions that cause reporting variations are student aid provided directly to students, central offices, extension programs, and fringe benefits or retirement payments. Financing arrangements that cause difficulty include debt service and capital financing (Ryland 1982).

Another major difference in funding concerns the activities included in an institution's budget versus another separate organization. For example, at the University of Illinois, Urbana-Champaign, all intercollegiate-athletic revenues and expenditures are handled by the University of Illinois Athletic Association which is a separate entity and therefore is not part of the HEGIS universe (Lapovsky 1983).

A third example involves reporting extension education. Lapovsky (1983) found that some institutions report revenues and expenditures for extension on the HEGIS finance form, but do not include their associated enrollments on the enrollment survey or vice versa. Consequently, comparative ratios involving dollars per full-time equivalent (FTE) student could be under- or overstated depending on the situation.

Reporting Problems

Lapovsky concluded that reporting problems were (1) the result of insufficient instructions on the HEGIS form, (2) insufficient information on the part of the institution, and (3) insufficient incentives to complete the form.

The instructions on the HEGIS forms provide wide latitude for interpretation by the institutions. For instance, in the definitions of full-time equivalent enrollment of part-time students, institutions are given three very different options for determining full-time equivalency. To the extent that institutions use different definitions, wide variations can be found in the enrollment figures reported to HEGIS. Since FTE is commonly used in ratios, lack of comparability is a major problem.

Individual interpretations also occur in other surveys. For the resident and migration survey, differences occur among states in the definition of a state resident. Similarly, on the finance survey, if an institution has a budget program structure different from the HEGIS program structure, determining where an institution's program fits into the HEGIS program must be determined by the person completing the form.

Since reporting procedures and practices in many states vary from HEGIS, often an institution may be required to compute two or more calculations in order to satisfy all reporting requirements. Consequently, due to financial and time constraints, only one set of reports will be made and the data will be "forced" to fit all surveys. If this is the case, it is generally to the benefit of the institution to use the accepted statewide definitions.

Uses of HEGIS Data

Up to this point, the discussion has concentrated primarily on the problems associated with using HEGIS data for comparative purposes. Even though problems exist with these data, the data are used nonetheless. Consequently, what sort of data are being used and how? To address this concern, inferences about typical uses and users of comparative data will be drawn from information attained from NCHEMS Information Service. This service was established in 1980 to make comparative data readily available to the higher education community. Since 1980 NCHEMS Information Service has generated approximately 2500 reports on comparative data. Interest in financial data predominates, followed by faculty salaries, enrollments, and degrees awarded.

The most frequently requested financial reports have dealt with revenues and expenditures per student, percent of revenues by source, and percent of expenditures by function. Given the interest in financial data, the primary uses of comparisons are probably budget analysis and financial planning in which comparative data are used to argue for a change in funding or allocation levels. Other possible uses include structural issues, proportion of effort by instructional level or outcomes, and resource-utilization patterns, to name a few.

Since the HEGIS surveys are used extensively for comparative analyses in higher education, and since there is considerable controversy on the comparability of the data, a survey was developed to determine the differences in the definitions and calculations among institutions in reporting HEGIS data. Results of the survey and the impact which the differences have on data interpretation are discussed below.

Questionnaire

A survey was conducted to determine specifically how certain sections of the HEGIS reports were completed by institutional respondents. Two reports, the "Fall Enrollment and Compliance Report" (ED NCES Form 2300-2.3A) and the "Financial Statistics Survey" (ED NCES Form 2300-4) were used since these two surveys are most often used together to provide indicators of financial health. Sampling was done in two phases: the first involved a random sampling from the Southern Association of Institutional Research mailing list and the second phase involved a sampling from the Association of Institutional Research membership. After a follow-up letter or telephone call, 78 responses (representing 66 percent of the mailing) were received. Respondents represented 13 two-year colleges, 9 four-year colleges, and 56 universities in 31 states and the District of Columbia. Table 1 below describes the sample in terms of classification and source of support.

Table 1

INSTITUTIONAL RESPONDENTS

	Classification			
Source of Support	2-year	4-year	University	Total
Public	13	0	47	60
Private	0	9	9	18
Total	13	9	56	78

Respondents were asked to define and give the rationale for "normal full-time

load" at their institution as used in the HEGIS report as well as to indicate which method (among several suggested on the HEGIS form) was used in completing the report. Several categories of students were listed and respondents were asked to indicate whether or not they were included in the enrollment figures reported to NCES.

Concerning the "Financial Statistics" survey, several questions were asked to determine into which functional categories some specific expenditures were reported and how "book value" of the physical plant was determined.

Results

The most common "normal full-time load" was 15 credit hours for undergraduates and 12 credit hours for graduate students. One institution reported using at least six different methods of calculating FTE for various reports during the year. Another reported four different formulas. It should be noted that the normal full-time load for undergraduates varied from 11 hours to 16.5 hours with over half of the institutions reporting 15 hours, and over 30 percent reporting 12 hours. At the graduate level, 12 credit hours was the most frequent response, followed by 9 credit hours.

Several interesting reasons were given for using the 15 and 12 hour criteria: tradition, state policy, governing board regulation, average student load, and minimum load for full-time status. Most frequent, however, was the number of hours required for graduation (120-128 at 4-year colleges and universities and 60 hours at 2-year schools) divided by the number of semesters (8 or 4, respectively). State policy was the reason mentioned second most often.

Although the instructions on the HEGIS Fall Enrollment Report specifically state to exclude auditors, high school students taking college courses, correspondence enrollment, and students enrolled concurrently at another college, several institutions chose to include them. While only 31 percent of the respondents included auditors, 59 percent included high school students taking courses at the institution. Summarized in table 2 are the institutional responses to that series of questions.

Table 2

INCLUSION OF STUDENTS ON HEGIS ENROLLMENT REPORTS

Type of Student	Yes	
	#	%
Auditor	24	31
High School	46	59
Non-Credit	4	5
Correspondence	8	10
Concurrent Enrollment	33	42

Some states have instituted a professional improvement program for teachers by providing a salary increment for those taking additional graduate courses, workshops, and so on. Programs such as this or other professional programs (for example, business, engineering) often enroll students taking courses and do not require those students to be formally admitted to a graduate program. Respondents were asked to indicate how these students were classified. The general response was "unclassified post-baccaluareate" (27 of the 61 institutions with graduate programs); however 21 percent (13/61) classified such students as regular graduate students.

Another aspect of this study involved case studies of two groups of institutions (a major research group and a community college group) with data obtained from NCHEMS Information Service. Full-time equivalent (FTE) expenditures

by function were obtained for ten institutions in each group using 1980-81 data. Table 3 summarizes total Educational and General (E&G) expenditures per FTE student for 9 universities (one of the 10 was so different it was excluded from the analysis).

Table 3

TOTAL E&G EXPENDITURES AT NINE UNIVERSITIES
1980-81

Institution	Total E&G	FTE Students	E&G/FTE
A	$298,707,396	31,003	$9,635
B	201,361,356	20,656	9,743
C	195,581,764	19,690	9,933
D	172,886,341	24,439	7,074
E	133,743,600	25,252	5,296
F	285,174,836	42,607	6,693
G	174,293,728	20,753	8,398
H	146,919,616	15,708	9,353
I	282,359,564	31,069	9,033

For the most part the institutions, with the possible exception of D, E, and F, appear to have comparable E&G expenditures per FTE. Institution D computed FTE students using six different definitions--each of which was reported by some institution in the survey as being used on the HEGIS Fall Enrollment report. The various formulas used for computing FTEs are shown in Appendix A and resulted in the following six different fall FTEs for institution D of 23,515; 24,097; 24,439; 24,679; 25,038; and 30,363--a difference of as much as 29.1 percent. This in turn changed the total E&G expenditures per FTE from a low of $5,694 to a high of $7,352. The corresponding rank among the group shifted only slightly although the dollars varied significantly.

Another even more interesting comparison is between institutions F and I (table 4). Both universities are in the same state and under a fairly strict state appropriation formula. The differences appear significant, with the land grant

institution showing 35.8 percent higher total E&G expenditures per FTE than the state university. Further analysis by function reveals even greater differences.

Table 4

COMPARISON OF E&G EXPENDITURES PER FTE BY FUNCTION
AT TWO INSTITUTIONS IN THE SAME STATE
1980-81

Institution	Instruct.	Research	Public Service	Academic Support	Student Services	Inst. Support	Op. & Maint. Phys. Plant	Inst. Student Aid	Mandatory Transfers	Total E & G
Institution J (State University)	$2,423	$1,652	$215	$539	$209	$202	$998	$204	$250	$6,693
Institution I (Land Grant)	$2,931	$2,301	$1,388	$191	$183	$1,122	$785	$206	$40	$9,088

Some of the differences in Research and Public Service could be explained by the expenditures of the agricultural experiment station and the cooperative extension service at the land-grant institution, if in fact these expenditures are included in the HEGIS report. But, what about the differences in Academic Support and Institutional Support? The large difference in mandatory transfers is due to the unique funding characteristics of one of the institutions.

A second illustration of differences in the distribution of expenditures by function is demonstrated in table 5 by two institutions in adjoining states with very similar total E&G expenditures per FTE (only about 1 percent difference).

Table 5

COMPARISON OF E&G EXPENDITURES PER FTE BY FUNCTION
AT TWO INSTITUTIONS IN ADJOINING STATES
1980-81

Institution	Instruct.	Research	Public Service	Academic Support	Student Services	Inst. Support	Op. & Maint. Phys. Plant	Inst. Student Aid	Mandatory Transfers	Total E & G
Institution A	$3,959	$2,755	$366	$297	$371	$935	$617	$129	$6	$9,635
Institution B	$3,290	$2,086	$2,074	$805	$181	$407	$851	$74	$0	$9,748

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The difference in instructional expenditures is over 20 percent and in research expenditures over 32 percent. The largest differences are in the public service (266%) and academic support (171%) categories.

A third illustration is based on ten community colleges with similar enrollments (7,500 to 10,000 FTE) and E&G expenditures ($16 million to $25 million). E&G expenditures per FTE student are shown in table 6.

Table 6

E&G EXPENDITURES AT 10 COMMUNITY COLLEGES
1980-81

Institution	Total E&G Expenditures	FTE	E&G/FTE
A	$24,620,559	8,598	$2,864
B	22,853,126	9,938	2,300
C	24,695,216	9,116	2,709
D	20,290,091	7,541	2,691
E	22,365,737	8,224	2,720
F	23,144,412	8,255	2,804
G	16,682,622	8,091	2,062
H	17,645,117	7,920	2,228
I	18,514,934	8,200	2,253
J	15,621,892	7,571	2,063

Institution D normally computes FTEs four ways:

1. Full-time (FT) headcount + (Part-time (PT) Student Credit Hours (SCH)/Avg. FT Load)
2. FT headcount + (PT Headcount/3)
3. Total SCH/15
4. FT headcount + (PT Credit Hours/15)

The FTEs at institution D ranged from 7,318 to 8,189, depending upon which of these four methods was used. As a result, total E&G expenditures per FTE were $2,478, $2,605, $2,691, and $2,773 using the respective computations, and changed

the rank of institution D among the other nine community colleges from fifth place as reported to HEGIS to second place. The difference between the low and high was $295 per FTE or 11.9 percent.

Some of the differences in the distributions by function can probably be explained by the manner in which institutions report expenditures on the HEGIS Financial Statistics Report. The definitions for the specific functions follow the NACUBO "Guidelines" and allow for considerable differences in interpretation. Nine specific areas of expenditures were singled out for analysis: non-credit continuing education courses, off-campus and/or extension courses, correspondence and/or television courses, course and curriculum development, sabbatical leave pay, developmental education, computing, telephone charges, and postage charges. Computing, for example, could be viewed as institutional support on one campus, academic support on a second, and could be prorated among various functions on yet a third.

The expenditures associated with a special event for such activities as physical education classes, athletic events, commencement, and non-institutional events can also be classified into various functions and were examined. Work done by maintenance personnel might be reported in Operation and Maintenance of the Physical Plant, or some other category. Also of interest was the budgeting of salaries and allocation of space of individuals when they perform several functions (athletic coaches in this example).

Table 7 shows institutional responses concerning the manner in which certain expenditures were reported on the HEGIS form. More institutions report non-credit course expense as instruction than as public service. The expenditures of the computer center were associated either with the function of the user department, or were charged to academic or institutional support. Nearly one quarter of the

schools absorbed telephone and postage charges as an institutional expense while the majority distributed the expense by function.

Table 7

CLASSIFICATION OF EXPENDITURES OF SELECTED ACTIVITIES

Activity	Instr.		Pub. Svc.		Acad. Supp.		Stud. Supp.		Inst. Supp.		OP&M		Aux. Ent.		Distr. By Func.		N/A	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Non-Cred.	40	51	27	35					1	1			3	4	2	3	5	6
Extension	57	73	6	8	1	1							1	1	3	4	10	13
Corresp.	40	51	2	3									1	1	4	5	31	40
Curr. Dev.	43	55			26	33			3	4					4	5	2	3
Sab. Leave	53	68			9	12			2	3					8	10	6	8
Dev. Ed.	47	60	1	1	7	9	14	18	2	3					2	3	5	6
Comp. Ctr.	13	17			17	22	1	1	21	27			2	3	24	31		
Telephone	14	18			4	5			15	19	4	5			41	53		
Postage	13	17			4	5			16	21	2	3			43	55		

Pertaining to the use of the coliseum or assembly center, 63 percent of the institutions with such a facility reported recording costs associated with teaching physical education as an operation and maintenance expense, while only 22 percent classified such expenses as instruction. See table 8.

Intercollegiate athletic events were generally regarded as an operation and maintenance expense or were charged to the auxiliary enterprise account, but commencement was generally reported as an operation and maintenance charge, as were expenses associated with civic meetings and similar non-institutional events.

Table 8

CLASSIFICATION OF EXPENDITURES IN SPECIAL EVENTS CENTERS*

Activity	Instr. #	Instr. %	Pub Svc. #	Pub Svc. %	Stu Svc. #	Stu Svc. %	Inst. Supp. #	Inst. Supp. %	OP&M #	OP&M %	Aux. Ent. #	Aux. Ent. %	Total #
P.E. Class	14	27			2	4			32	63	3	6	51
Athletic Event					8	15	1	2	25	45	21	38	55
Commencement					5	8	16	25	31	48	3	5	65
Civic Meeting	1	2	8	15	3	6	5	9	28	52	9	17	54

* Number and percent represents only those institutions with such a facility.

Forty of the 78 reporting schools (51.3%) with athletic programs classified athletic expenditures in an auxiliary enterprise account. Also, most salaries of coaches were cross-charged when those individuals performed various other functions but only nine schools allocated their office space to more than one function.

The final section of the questionnaire dealt with the basis used to determine the "Book Value" of the plant. Book value of the physical plant as defined by HEGIS is ". . . the dollar value amount of value as shown on the institutions' accounting records." The most frequently indicated method of valuing the plant was using the original cost plus major renovations, which was chosen by 79 percent of the respondents.

Conclusions

Problems of comparability with HEGIS data were confirmed as a result of this study. Three major types of differences were found that can affect the interpretation of the data:

1. Ratios of dollars per FTE differ significantly depending on the definition used for FTE.

2. Categorizing expenditures by function differs among institutions.

3. Rankings among peer institutions differ depending on the definitions and calculations used when completing the HEGIS surveys.

Although using HEGIS data for comparative analyses may have some problems, consideration must be given to the fact that HEGIS is the only available, universally collected information source on higher education institutions. In fact the same problems would most likely exist regardless of the data source. There are numerous other problems associated with not using HEGIS and with the collection of one's own data: cost, burden on respondents, confusion caused by duplication and the possibility of a conflicting data set, and the lack of quality associated with a first-time data collection (McCoy 1982). Consequently, HEGIS is the best complete data set that can be used for comparisons in higher education.

The challenge facing those using HEGIS data is understanding how to best use the data: the reporting differences are for the most part primarily from legitimate differences in state strategies for funding and financing postsecondary education. Awareness of the reporting variations from institution to institution is an important consideration for anyone using HEGIS data.

When making comparisons between institutions, sectors, or states, it is important to select carefully the peer groups; consideration should be given to characteristics such as size, type, location, tradition, and so on. Once a peer group is selected, information should be obtained from the institutions on their data-recording and accounting practices. With this knowledge, appropriate adjustments can be made where there are discrepancies among the institutions in the peer group.

Hopefully, the continued and widespread use of HEGIS data in comparisons among institutions, sectors, and states may prompt those individuals responsible for completion of the forms to complete the forms accurately. In addition, NCES needs encouragement to change the instructions on the HEGIS survey forms to avoid the ambiguity in completing the forms that currently exists. Recommendations also need to be made to improve NACUBO/AICPA guidelines. These actions will help in making HEGIS a better tool for comparative data analyses.

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Appendix A

Six Definitions of Full-Time Equivalent Enrollment

1. Full-time = Undergraduates with more than 11 hours carried; plus graduate and professional students with more than 8 hours carried.
   FTE Part-time = Part-time credit hours divided by 15 and 9, respectively.

2. Full-time = Undergraduates with more than 14 hours carried; plus graduate and professional students with more than 8 hours carried.
   FTE of Part-time = Credit hours divided by 15 and 9, respectively.

3. Full-time = Undergraduates with 11 hours carried; plus graduate and professional students with 6 hours carried.
   FTE of Part-time = Credit hours divided by 12 and 9, respectively.

4. FTE = Total undergraduate credit hours divided by 15; plus total graduate and professional credit hours divided by 9.

5. FTE = Total undergraduate credit hours divided by 12; plus total graduate and professional credit hours divided by 9.

6. Full-time (more than 11 hours carried undergraduate, more than 8 hours carried graduate and professional) plus one-third of part-time.